

#2

12. (Seven Times Amended) The method of forming a crystalline film, comprising:

forming a semiconductor thin film having a surface on a glass substrate; and crystallizing at least a surface layer of the semiconductor thin film by applying energy through a window that exhibits transparency to the energy to the surface of the semiconductor thin film, wherein a distance between the window and the thin film is more than about 20 mm, and at least the surface layer of the semiconductor thin film is melted by the applied energy and crystallized by cooling solidification under an atmosphere of at least atmospheric pressure containing a gas containing the component element of the semiconductor thin film and hydrogen,

wherein unpaired bonding electrons on the surface of the semiconductor thin film during the cooling solidification are terminated by hydrogen atoms in the atmosphere of at least atmospheric pressure.

#3

20. (Eight Times Amended) A method of forming a crystalline film, comprising:

forming a thin film on a glass substrate;

setting the thin film in a supply chamber of a high energy supply apparatus including a generation source for generating the high energy and the supply chamber for supplying the high energy to the thin film, the supply chamber including an introduction window that exhibits transparency to the energy and introduces the high energy into the supply chamber;

crystallizing at least a surface layer of the thin film by supplying high energy through the introduction window to the thin film under a hydrogen-containing atmosphere of at least atmospheric pressure, at least the surface layer of the thin film being melted by the high energy and crystallized by cooling solidification, and unpaired bonding electrons on a surface of the thin film during the cooling solidification being terminated by hydrogen atoms in the hydrogen-containing atmosphere of at least atmospheric pressure; and

positioning the introduction window relative to the thin film at a location resistant to adherence of components of the thin film when the high energy is supplied to the thin film such that a distance between the introduction window and the thin film is more than about 20 mm.

#4

25. (Eight Times Amended) A method of forming a crystalline film, comprising:

forming a thin film on a glass substrate;

setting the thin film in a supply chamber of a high energy supply apparatus including a generation source for generating the high energy and the supply chamber for

supplying the high energy to the thin film, the supply chamber including a wall and an introduction window provided in a portion of the wall, the introduction window introducing the high energy into the chamber;

crystallizing at least a surface layer of the thin film by supplying high energy through the introduction window that exhibits transparency to the energy to the thin film under a hydrogen-containing atmosphere of at least atmospheric pressure, at least the surface layer of the thin film being melted by the high energy and crystallized by cooling solidification, and unpaired

bonding electrons on a surface of the thin film during the cooling solidification being terminated by hydrogen atoms in the hydrogen-containing atmosphere of at least atmospheric pressure; and

positioning the introduction window relative to the thin film so that a distance between the introduction window and the thin film is larger than about 20 mm.

30. (Seven Times Amended) A method of forming a crystalline film, comprising:
forming a thin film on a substrate; and

crystallizing at least a surface layer of the thin film by supplying high energy to the thin film under a hydrogen containing atmosphere of at least atmospheric pressure, at least the surface layer of the thin film is melted by the high energy and crystallized by cooling solidification, and unpaired bonding electrons on a surface of the thin film during the cooling solidification are terminated by hydrogen atoms in the hydrogen-containing atmosphere of at least atmospheric pressure, wherein:

crystallizing is carried out in a high energy supply apparatus which includes a generation source for generating the high energy and a supply chamber for supplying the high energy to the thin film;

the thin film is set in the supply chamber;

the supply chamber includes an introduction window that exhibits transparency to the energy and introduces the high energy into the supply chamber, wherein a distance between the introduction window and the thin film is more than about 20 mm; and

the high energy is supplied to the thin film under a pressure in the vicinity of the introduction window that is higher than a pressure in the vicinity of the thin film in the supply chamber.

35. (Seven Times Amended) A method of forming a crystalline film, comprising:
forming a thin film on a glass substrate; and

crystallizing at least a surface layer of the thin film by supplying high energy to the thin film under a hydrogen-containing atmosphere of at least atmospheric pressure, at least the surface layer of the thin film is melted by the high energy and crystallized by cooling solidification, and unpaired bonding electrons on a surface of the thin film during the cooling solidification are terminated by hydrogen atoms in the hydrogen-containing atmosphere of at least atmospheric pressure, wherein:

crystallizing is carried out in a high energy supply apparatus which includes a generation source for generating the high energy and supply chamber for supplying the high energy to the thin film;

the thin film is set in the supply chamber;

the supply chamber includes an introduction window that exhibits transparency to the energy and introduces the high energy into the supply chamber, wherein a distance between the introduction window and the thin film is more than about 20 mm, and an exhaust port for exhausting air in the supply chamber; and

the high energy is supplied to the thin film under (i) a pressure in the vicinity of the introduction window that is higher than a pressure in the vicinity of the thin film, and (ii) a pressure in the vicinity of the thin film that is higher than a pressure in a vicinity of the exhaust port in the supply chamber.

40. (Seven Times Amended) A method of forming a crystalline film, comprising:
forming a thin film on a glass substrate;

crystallizing at least a surface layer of the thin film by supplying high energy to the thin film under a hydrogen-containing atmosphere of at least atmospheric pressure, at least the surface layer of the thin film is melted by the high energy and crystallized by cooling solidification, and unpaired bonding electrons on a surface of the thin film during the cooling solidification are terminated by hydrogen atoms in the hydrogen-containing atmosphere of at least atmospheric pressure, wherein:

crystallizing is carried out in a high energy supply apparatus which includes a generation source for generating the high energy and a supply chamber for supplying the high energy to the thin film;

the thin film is set in the supply chamber;

the supply chamber includes an introduction window that exhibits transparency to the energy and introduces the high energy into the supply chamber, wherein a distance between the introduction window and the thin film is more than about 20 mm;

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amended.

the thin film is irradiated with the high energy introduced into the supply chamber through the introduction window along an irradiation path in the supply chamber;
a part of the high energy enters the thin film, and another part of the high energy is reflected from the thin film along a reflection path in the supply chamber;
a gas flow is present in the supply chamber; and
the high energy is supplied to the thin film with (i) the gas flow from the introduction window to the thin film in approximately the same direction as the irradiation path, and (ii) the gas flow from the thin film in approximately the same direction as the reflection path.

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46. (Eight Times Amended) A method of forming a crystalline film, comprising:
forming a thin film on a glass substrate; and
crystallizing at least a surface layer of the thin film by supplying high energy through an introduction window that exhibits transparency to the energy to the thin film under a hydrogen-containing atmosphere of at least atmospheric pressure, at least the surface layer of the thin film is melted by the high energy and crystallized by cooling solidification, and unpaired bonding electrons on a surface of the thin film during the cooling solidification are terminated by hydrogen atoms in the hydrogen-containing atmosphere of at least atmospheric pressure, wherein:
crystallization is carried out in a high energy supply apparatus that includes a generation source for generating the high energy and a supply chamber for supplying the high energy to the thin film;
the thin film is set in the supply chamber;
the supply chamber has the introduction window provided in a portion of the wall of the supply chamber, for introducing the high energy into the supply chamber, wherein a distance between the introduction window and the thin film is more than about 20 mm;
the thin film is irradiated with the high energy introduced into the supply chamber through the introduction window, the high energy passes through the introduction window along an irradiation path and travels along the irradiation path in the supply chamber;
and
the high energy is supplied to the thin film with the normal direction of the thin film shifted by an angle from the direction of the irradiation path.

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56. (Seven Times Amended) A method of forming a crystalline film, comprising:
forming a thin film on a glass substrate; and